Ministry of Agriculture

Farm & Food Report

Communications Branch, Walter Scott Building
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WATERSHEDS OF AGRICULTURAL SASKATCHEWAN POSTERS AVAILABLE

A new poster map entitled *Watersheds of Agricultural Saskatchewan* is being made available for distribution to serve as a reminder of the importance of watershed stewardship. It was produced by Agriculture and Agri-Food Canada, the Saskatchewan Ministry of Agriculture and the Saskatchewan Watershed Authority (SWA).

A watershed is an area of land from which surface water drains into a common receiving body, such as a lake or river. The map shows how water moves throughout the province.

Most of Saskatchewan belongs to the Hudson Bay drainage system, although water from the northwest corner flows into the Arctic Ocean, and the southwest drains into the Gulf of Mexico via the Missouri River system.

The poster map outlines the major drainage systems, major basins and watersheds with respect to communities, rural municipalities, First Nations and bodies of water.

According to Wayne Gosselin, Environmental Policy Analyst with the Saskatchewan Ministry of Agriculture, the purpose of distributing the poster map is to build awareness.

"Clean water is a gift from neighbour to neighbour, from generation to generation," he said. "We'd like people to think about the fact that they each live in a watershed, and that the actions they take affect people downstream – and they, in turn, are affected by what people upstream do."

Gosselin notes it can be easy for people to lose sight of the fact that their actions, whether they involve drainage or contamination, may be affecting the water supply of others.

Agriculture represents the single largest land use in the southern two-thirds of the province. Water is essential to agriculture, as farmers and ranchers need adequate supplies of clean water for livestock, irrigation and household use. Agriculture is also one of the activities that may affect groundwater and surface water quality and quantity.

However, Gosselin says that through the use of beneficial management practices (BMPs), producers can minimize harmful effects. These BMPs include reduced tillage systems, precision farming, manure management and riparian area management.

(more)

The *Watersheds of Agricultural Saskatchewan* poster map is a useful tool for education and planning. It has been distributed to municipalities, First Nations, schools and a variety of other organizations.

It is available to the public free of charge by contacting the Saskatchewan Ministry of Agriculture's Agriculture Knowledge Centre at 1-866-457-2377, and can be viewed on the SWA website at www.swa.ca/Publications/Documents/WatershedsofAgriculturalSaskatchewan.pdf.

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Saskatchewan

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"GREEN MANURE" A GOOD ALTERNATIVE TO SUMMERFALLOW IN ORGANIC CROPPING SYSTEMS

Research into the use of "green manure" crops as a means of replenishing soil nutrients without commercial fertilizers has revealed some important insights for agricultural producers.

Green manuring is the practice of planting a crop, typically a legume, for the sole purpose of tilling it into the soil. The vegetation is not intended for harvest and economic return, but to restore organic material and nutritional vigour to the soil.

From 2004 to 2007, researchers at the University of Saskatchewan studied the benefits of green manure using commercial organic farms in the Vonda and Delisle areas for their test plots. The research was aided by financial support from the Saskatchewan Ministry of Agriculture's Agriculture Development Fund (ADF).

According to Fran Walley, the head of the Soil Science Department at the U of S, the project was also intended to determine if a cropping system could be developed that would increase soil fertility while, at the same time, providing some economic return to the producer.

"In the past, green manure has been seen as a good way of enhancing soil organic matter and, in particular, returning nitrogen to the soil – but the downside of growing a green manure crop is that there's no economic return during the year the green manure is grown," Walley said.

A possible solution was to develop a "green forage" crop that could be harvested after it became established and had fixed nitrogen in the soil.

The experiment consisted of 16 treatments in which feed pea, oat and triticale were grown alone or in combination, and managed as either green manure or green forage. Researchers began by monitoring the soil nutrient levels before the experiment was initiated. After the treatments, the soil was tested again for various nutrients, particularly nitrogen and phosphorous. Wheat and fallow served as cropped and non-cropped controls against which results could be measured.

In the following year, the test plots were seeded with wheat. Yields were measured and the nutrient uptake of the crop was analyzed. Not surprisingly, the plot where wheat was grown for two consecutive years had the lowest yield. The best yields were achieved on the summerfallow plot and where feed pea had been cropped for green manure.

(more)

s not surprising because, in the summerfallow year, you're not using any moisture and you're also ng any of the nutrients. Plus, you're breaking down organic matter that already exists in the soil easing nutrients," Walley said.

er, the problem with summerfallow is that nothing is being added back to the soil. If the goal is the application of commercial fertilizer, to reduce input costs or produce organic crops, rfallowing becomes unsustainable over time.

're not adding any nutrients back to the soil, fallow is not going to be sustainable, and that's green manure is of benefit," she stated. "So, the fact that the wheat yield following green manure good as following fallow was viewed as positive news."

chers were also concerned that growing a crop for green manure might use up too much soil re, resulting in a moisture deficit in the subsequent growing season. In these trials, those concerns to be unfounded.

dn't allow the green manure crop to grow very long, just four or five weeks, and we tilled it with m disc . That didn't have a significant impact on the moisture availability for subsequent crops," noted. "Consequently, the yields were as good on green manure as if we had just done standard rfallow – but we know we've added organic matter and nitrogen back to the soil. We also found phosphorous levels were highest in the green manure treatments."

nately, the results on the green forage plots were not as positive, revealing an overall negative n the yield in the following year's wheat crop.

gh we tended to harvest the green forage treatments quite early, there was still significant uptake phosphorous and nitrogen, a lot of which ended up in the plant material that was removed from , so there was a net reduction," Walley said. "Any nitrogen that we left in the roots of those lants would have been released, but it wasn't enough to compensate for the nitrogen we removed rage itself."

rtilizer prices reaching new heights, Walley says any practices that might enhance soil fertility g to be a welcome addition to a cropping system. The option of growing your own nitrogen crop e becomes increasingly attractive for producers. However, she cautions that none of these ns are straightforward.

n't think in terms of a single nutrient. We also have to think about factors like water depletion moisture. In some years, particularly in Saskatchewan, that's a very important consideration," ed.

py of the ADF project *Feedpea-Based Green-Feed Forage: A New Option for Organic Wheat pping System*, #20030543, can be obtained by phoning the Saskatchewan Ministry of Agriculture at) 787-5929. It is also available on the Ministry's website at http://www.agriculture.gov.sk.ca/ under Research link.

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of May 12, 2008

WIN BOASTS WORLD-CLASS ETHANOL TECHNOLOGY

yst and process for ethanol processing, owned by the Nipawin Biomass Ethanol New Generation
rative and the Saskatchewan Research Council (SRC), demonstrates Saskatchewan's capacity for
nology, and holds significant potential for environmental sustainability and agriculture.

hnology could be a success story in the making, and stems from the vision of a community ready
alize on its resources.

, the Nipawin Economic Development Committee was working on a strategic plan. Like many
nities at the time, Nipawin considered a grain-based ethanol plant.

e the community is situated on the forest line, the quantity of feed-grain produced was not high.
, Economic Development Officer Sherry Michalyca performed some research on opportunities
ld accommodate both wood and agricultural products.

C provided Nipawin with a lead to a technology that had not yet been commercialized. It gasifies
ural waste and, using a catalyst, turns it into a synthetic gas.

he gas is run through a converter, it changes to methanol, ethanol or a variety of other products,
ing on the catalyst used. The most valuable product was ethanol, and the Nipawin Economic
pment Committee decided to move forward with plans.

pawin Biomass Ethanol New Generation Co-operative Ltd. was formed in 2003. The founding
f directors raised almost $400,000 to invest in the commercialization of the technology.

t from the community, local rural municipalities and First Nations was overwhelming, and the
00 was leveraged into a $2.1 million project.

operative contracted the SRC to create a catalyst and a process to use. Work was completed in
07, and an agreement was drafted between the two organizations on how they would share
g fees.

(more)

Using the technology developed by the SRC, researchers are able to produce 500 litres of ethanol per tonne of crop residue. By comparison, the same volume of grain produces 300 to 350 litres of ethanol, said Michalya. "This achievement helped us put some good economics into our business plan," she said.

In October 2007, the co-operative met with a U.S.-based company looking for a catalyst technology to convert synthetic gas into higher-value products. After researching 160 companies worldwide, they were impressed to find one of the best process technologies right here on the Canadian prairies.

The company and the co-operative are now working together to build a process demonstration unit that will further test the catalyst for production capacity and lifespan.

The opportunities for farmers in the area to contribute to biomass ethanol production are significant. For one, producers can earn a dual income from their land by processing the crop residue as well as the crops.

Additionally, they can make better use of marginal land by supplying the growth for ethanol production.

Finally, the value of old residue, such as 10-year-old flax straw bales, is still quite high in the biomass process. As a result, it extends the utility life of certain agricultural products and provides a return on something that often goes to waste or is burned.

One of the most desirable features of the technology developed by the partnership between SRC and Nipawin Biomass Ethanol is its adaptability. According to Michalyca, the U.S. company's ultimate interest lies in its desire to convert municipal solid waste into fuel.

With its implications for sustainability and agricultural opportunity, Nipawin Biomass Ethanol is a source of pride for the community and the province, and showcases the best of innovation and co-operation.

"This is a made-in-Saskatchewan technology," Michalyca said, "and it's a very good example that when you bring the right people together, both the community and research institutions, you have an opportunity to be world-class."

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WHOLESOME FOOD THE FOCUS FOR GOOD SPIRIT FARMS

Visit the Saskatoon farmers' market on any given Saturday and you will find highly nutritious artisan bread, as well as goat and lamb meat available fresh from Good Spirit Farms in the Naicam-Lac Vert area.

Peyton Leavitt and Jonathan Lee raise dairy goats for breeding stock. They also sell goat and lamb meat. When the BSE crisis hit and the border closed to goats and sheep, the pair turned to the production of artisan bread.

The farmers' market was a familiar scene for the sale of their product. Originally from British Columbia, Leavitt and Lee moved to the Lac Vert area from Nova Scotia, where they practiced agriculture by way of selling vegetables at farmers' markets.

"I thought, 'Maybe we can sell enough bread that we could supplement our income,'" Leavitt said. "It ended up being the thing we do now. It really took off like crazy." The first week they attended the Saskatoon farmers' market, they sold all 150 loaves of their bread.

For three years, they kept production at the same level, lining their kitchen oven with clay tiles to emulate a brick oven. They baked around the clock, but the effort was taxing. So they decided to hire a German mason to build a European-style brick oven that allows them to bake 50 loaves at once. "We don't have to stay up all night anymore," Leavitt said with a chuckle.

The meat they sell is organic. The sheep are not grain-fed, but are pastured on a combination of 60 acres of woodland and 60 acres of field. With only 20 ewes, there is no overgrazing. Moreover, the meat is very flavourful, because of the variety of plants to which the sheep are exposed. The lambs are sold whole or in halves, with buyers choosing their preferred cuts of meat.

Because of the success of their farmers' market venture, Lee had to leave his employment to help with the business. "It just took off right from that first day," he said.

Now, for the first time, Good Spirit Farms has hired an employee to work a few hours a week, helping with clean-up.

(more)

Leavitt says the pair might add a side wheat operation to the venture in order to diversify their income. However, until they are ready to handle a greater level of activity, their plan is to maintain the current size of operation in order to preserve the high quality for which Good Spirit Farms has built a reputation.

For five years, that balance has served the partners well.

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DESPITE COST, FERTILIZER IMPORTANT FOR CANOLA YIELDS

As tempting as it may be for producers to reduce input costs by cutting down on fertilizer, the Canola Council of Canada is advising growers to maintain recommended application levels. According to the organization, canola is so responsive to nutrients that the extra yield potential generally outweighs the expense, even at current fertilizer prices.

David Vanthuyne is an agronomist for the Canola Council based in Watrous. He notes that, as canola prices increase, so too do the stakes involved in tampering with fertilizer levels. He refers to an example of nitrogen fertilizer to demonstrate the risks.

"If you drop your fertility by 20 pounds of nitrogen, you could potentially lose 2.2 bushels per acre. Back in the days when we had $6 to $8 canola, that wasn't as significant as it is now, when we're dealing with $13 to $14 canola," Vanthuyne observed.

He says the decision can have a major effect on the net profit of growers. "Even though you reduce your fertilizer input costs by $11 or $12 an acre, you're still potentially going to lose upwards of $30 an acre in yield," Vanthuyne stated, highlighting an $18 reduction in profitability per acre as the net result in his example.

"Canola is so responsive to nutrients that, by reducing your nitrogen, you can impact your overall yield and crop health," he summarized. "We're encouraging growers that there is a far greater downside to reducing your impact from fertility, where it's better to maintain the same level."

Despite high input costs, today's economic climate is profitable for canola producers. "There is still a 40-per-cent profit margin on most everything, which is significant compared to what we've been dealing with these last few years," said Vanthuyne. He adds that producers who purchased fertilizer last year will reap an even higher profit, demonstrating the value of planning ahead.

A better approach for producers seeking relief from high input costs is to maximize the efficiency of their fertilizer application. In this case, the Canola Council says that soil testing is a sound investment, and a practice the organization would like to see increase among producers.

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"We'd like to see the number of growers using soil tests rise, simply because it provides a benchmark. Depending on what the year brings, when you go from a drought, you tend not to use as much nitrogen. When you get into a wetter year, more nitrogen tends to get used up," Vanthuyne said.

"Growers really need to benchmark where they sit, especially on the canola acres, because the input costs tend to be higher for canola than some of the other crops they'll grow."

In many instances, soil tests will confirm that a grower's fertilizer practices are adequate. In other cases, they may learn that they are over-applying nitrogen because there is more in the soil profile than they expect.

"With the cost of inputs being so high, it's a starting point for growers to look at where they have to go to achieve the target yield," Vanthuyne said.

Although canola producers face significant input costs this year, the Canola Council of Canada says the higher prices the oilseed is fetching on the market mean that appropriate fertilizer application is an investment in profitability. To maximize the return on the application of nutrients, a soil test serves as a sound planning tool.

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